

**GUJARAT TECHNOLOGICAL UNIVERSITY**

**BE - SEMESTER- V (New) EXAMINATION – WINTER 2019**

**Subject Code: 2153509**

**Date: 29/11/2019**

**Subject Name: Liquid Effluent Treatment-I**

**Time: 10:30 AM TO 01:00 PM**

**Total Marks: 70**

**Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

		MARKS
<b>Q.1</b>	(a) Differentiate Sewage & Effluent.	<b>03</b>
	(b) With a help of a neat sketch explain microbial growth pattern curve.	<b>04</b>
	(c) Discuss various sources of drinking water. Also explain utilization of water for different purpose.	<b>07</b>
<b>Q.2</b>	(a) Explain the principal role and purpose of screen.	<b>03</b>
	(b) Differentiate suspended growth process & attached growth process.	<b>04</b>
	(c) With a help of a neat sketch explain wet feeding of coagulants.	<b>07</b>
	<b>OR</b>	
	(c) Discuss different population forecasting methods.	<b>07</b>
<b>Q.3</b>	(a) Explain characteristics of grit particles.	<b>03</b>
	(b) Discuss limitations of BOD test.	<b>04</b>
	(c) With a help of a neat sketch explain different locations of equalization tank.	<b>07</b>
	<b>OR</b>	
<b>Q.3</b>	(a) Explain the limitation of ultrafiltration over reverse osmosis.	<b>03</b>
	(b) Explain the working of Rotating Biological contactor in brief.	<b>04</b>
	(c) Define Screening. Classify screens on the basis of their opening size & method of cleaning in detail.	<b>07</b>
<b>Q.4</b>	(a) Discuss the design aspects of sedimentation tank.	<b>03</b>
	(b) With a help of a neat sketch explain Activated sludge process in brief.	<b>04</b>
	(c) Discuss physical characteristics of wastewater in detail.	<b>07</b>
	<b>OR</b>	
<b>Q.4</b>	(a) Enlist different methods of neutralizing waste and explain and one in brief.	<b>03</b>
	(b) Write a note on importance & necessity of planned water supplies.	<b>04</b>
	(c) With a help of a neat sketch explain vortex type grit chamber.	<b>07</b>
<b>Q.5</b>	(a) Write equation & explain notation in each equation with their units:	<b>03</b>
	1. Krishmer's equation to calculate head loss through a bar rack	
	2. Head loss through fine screens	
	3. Head loss through partially cleaned bar screen	
	(b) Explain in brief the impacts due to high alkalinity levels in wastewater.	<b>04</b>
	(c) Write a note on variations in wastewater flow rates.	<b>07</b>
	<b>OR</b>	
<b>Q.5</b>	(a) Differentiate Stream Standards & Effluent Standards.	<b>03</b>
	(b) Enlist different types of sedimentation tanks and explain Circular sedimentation tank in detail with a neat sketch.	<b>04</b>
	(c) Enlist different water borne diseases. Also discuss preventive steps to be taken care of during epidemics.	<b>07</b>

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